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SCHEDULE OF MEETINGS

7-11 November	**Study Group on Arteriosclerosis, Geneva**
10-24 November	**International Conference on Yaws Control, Enugu, Nigeria**
15 November-3 December	**Seminar on Public Health Administration, Egypt and Soudan**
17-26 November	**Study Group on Basic Nursing Curriculum, Brussels**
23-26 November	**Study Group on Leptospirosis, Amsterdam**
28 November-2 December	**Study Group on Tuberculosis Control, Luxembourg**
28 November-6 December	**Second African Malaria Conference, Yaba, Lagos, Nigeria**
5-9 December	**Joint WHO/UN Advisory Group on Social and Medical Social Work, Amsterdam**
6-15 December	**Study Group on Filariasis, Kuala Lumpur**
12-17 December	**Seminar on Environmental Sanitation, Ibadan, Nigeria**
12-17 December	**Expert Committee on Maternal and Child Health Administration, Geneva**

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PROSPECTS OF INTERNATIONAL PUBLIC HEALTH CO-OPERATION IN THE USES OF NUCLEAR ENERGY *

The problem of protection against radiation has today taken on a new aspect. In the past it was only radiologists, and more recently personnel working in atomic energy installations, who were exposed to radiation hazards. This is no longer the case. With the widespread use of nuclear energy, whole populations run the risk of being affected by radiation. Although protection against this risk is certainly an important aspect of industrial hygiene, it has now become also one of the general aspects of public health.

For this reason, the World Health Organization felt that it would be opportune to submit two papers to the recent International Conference on the Peaceful Uses of Atomic Energy. The first was entitled " The General Problems of Protection against Radiations from the Public Health Point of View " and the second, " Education and Training in Health and Medical Uses of Atomic Energy ". These are to be published by the United Nations in the proceedings of the conference and may be referred to for further details. This material was intended to draw the attention of both national public health administrators and nuclear energy specialists to the extent and importance of the health problem which is inherent in the development of atomic energy.

EXTENT OF THE PROBLEM OF PROTECTION AGAINST RADIATION

While man has always been exposed to radiation from cosmic and other natural sources, today's developments in nuclear power will, with the passage of time, lead to an increase in background radiation level from radiation sources of man's own making, if these are not controlled. From what is already known of the biological effect of radiation, an intensification of the radiation background is likely to lead to genetic and possibly somatic effects in man. It is, therefore, on those who are responsible for public health that the obligation falls to do everything possible to prevent background radioactivity from increasing too rapidly and from attaining too high a level. This danger, still very small, already exists in the operation of nuclear energy plants; and adequate protective measures are at present being adopted at the industrial level. As the use of nuclear power for industrial purposes extends, however, the problem will become a much wider one.

The present codes of practice for dealing with radioactive effluent from atomic energy plants are compiled on the supposition that an insignificant proportion of the world population is involved. As that proportion increases, these codes may have to be made more exacting. The limiting factor in compiling standards is, and is likely to remain for some time, knowledge of human genetics, a subject on which there are few relevant quantitative data. But time is short, and public health must fulfil its obligation by intelligent control so that general exposure to radiation background will not soon reach levels from which there is no return.

This lack of adequate numerical data relating radioactive background to its effect on the world population opens the way to the two extreme courses of over-caution, on the one hand, or undue leniency, on the other. Public health activities must be directed to

* A suggested programme for public health based on two papers (A/Conf.8/P/778 and A/Conf.8/P/779) submitted by WHO to the International Conference on the Peaceful Uses of Atomic Energy

making use of the experience gained in industries using nuclear energy during the last ten years; those responsible for public health must not lay themselves open to the accusation that they are hindering the development of nuclear energy and thus depriving the world of its benefits. On the contrary, positive and constructive collaboration must begin at once between public health administrators and those who are responsible for the technical development of the new form of energy. The task will be lightened considerably by the provision of really adequate protection in new installations, and for this reason public health should collaborate in the early design stage. It has been seen in the past how occupational health problems which were foreseen and attended to in good time were found to be less costly than those discovered too late.

At the present time the technical staff in nuclear energy installations are themselves largely dealing with the question of protection of neighbouring communities, but as the installations increase in number the responsibility will fall to a much greater extent on public health authorities. Here again, there must be agreement with the technical experts, for regulations, if they are to be effective, must be essentially practical.

SPECIFIC PROBLEMS AND RESPONSIBILITIES

Nuclear energy plants will impinge on public health by means of their waste products, and through the widespread distribution of radioactive isotopes. The practical public health problem will then be to assess and control the radioactive wastes and to ensure that the radioactive isotopes distributed are safely transported and disposed of. The wastes are of three kinds—gaseous, liquid, and solid.

The air may be polluted from stacks which emit either radioactive particles or gases. Particulate waste can be filtered, and there is already much experience in this field. Some of the radioactive material emitted from stacks may be gaseous and can pass through any filter, but on the whole these are short-lived. The use of filters and gas traps changes the air pollution problem to one of the disposal of solid contaminated waste. In this connexion, public health services must be equipped to carry out air monitoring, to be assured that conditions are safe in populated areas. The present safe disposal standards are contained in the Recommendations of the International Commission on Radiological Protection (1953).

Pollution of water by radioactive materials is also a problem. If waterways are used for the disposal of radioactive materials, small quantities of such waste are very liable to reach water which may be used for drinking or in which edible organisms are living. The standards for such pollution are also contained in the Recommendations of the International Commission on Radiological Protection, and public health authorities must be in a position to verify them. It must be remembered that some biological systems have the power to concentrate certain radioactive elements so that a water monitoring programme must include the measuring of radioactivity in water, edible organisms, some of the lower forms of life, and sediments.

At present much of the dilute wastes from atomic installations are dealt with by running them into the ground, where the radioactive elements, which are in small bulk, are taken up and retained, mostly by the clay. The practice of getting rid of wastes in this manner is economically desirable, but care must be exercised in its execution, especially as it may become widespread. The presence of large quantities of chemicals in the waste solution may destroy the soil's property of retaining the radioactive elements. Also, the movements of these wastes are governed by the properties of the soil itself and the move-

ments of the ground water. A more conservative approach to ground disposal is the use of specially prepared beds, so that the active soil is retained under control and the effluent from the beds monitored and disposed of to the ground if sufficiently decontaminated. The burial of contaminated solid material raises much the same problems as the release into the ground of contaminated solutions. The site must be chosen with the same considerations in mind.

A much bigger public health problem is the disposal of highly radioactive wastes. To date there is no good solution to this problem, and many methods are being studied. In the meantime, the wastes are stored in tanks awaiting permanent disposal. For countries which are crowded together and which lack space it may be desirable to have a common waste disposal site; also, the possibility arises of having a few recognized sites throughout the world which would be considered safe for the deposit of high-activity waste and which would be under international control.

A SUGGESTED PUBLIC HEALTH PROGRAMME

It now seems possible to suggest a programme of work which might logically be undertaken in public health along with the development of nuclear power.

Training of personnel

This is one of the immediate important requirements. The number of public health personnel trained in this specialized field is at present inadequate, especially in countries which as yet have no nuclear energy programme. Moreover, public health workers must be trained to such a level as to command the respect of their colleagues in physics, chemistry, and engineering, if their advice is to be heeded.

Training will have to be begun at the level of the medical student. Knowledge of the nature of radioactivity and its relationship with biology and medicine should be included in the preclinical courses, and information concerning the use of radioactive substances in diagnosis and therapy in the clinical period, with particular emphasis on the radiation protection aspect. In addition, to prepare him for his future role in the community as a health educator, the medical student should be introduced to such subjects as possible community effects of nuclear contamination.

In training doctors for specialization in the use of radio-isotopes for diagnosis, therapy, and research, emphasis should be placed on methods of safe handling and disposal of radioactive materials. Courses for the study of the medical uses of radio-isotopes, or an apprenticeship in their use under actual working conditions, are available only in certain countries; and provision has often to be made for study abroad for those interested in this work. The World Health Organization has been able to award several fellowships along these lines.

With regard to the public health and preventive aspects of nuclear energy, measures must be taken to instruct medical officers of health, public health engineers, and other relevant personnel in the nature of ionizing radiations, their effect on the body, and protection methods. The medical officer may eventually be called in to give advice on problems such as the disposal of radioactive wastes, including the burial or cremation of bodies of patients treated with radio-isotopes. Alternatively, he may have to take part in discussions on the siting of atomic power stations. Such instruction will probably devolve upon schools of public health or institutes of hygiene, which should also offer refresher courses for those who have completed their training before these subjects were introduced into the curriculum. Those engaged in industrial health—physicians, en-

gineers, and nurses—have a special interest in nuclear energy and must be equipped to perform newly imposed functions.

Consideration must also be given to the training of personnel for the new professions which are coming into existence with the increasing use of nuclear energy. There is need for staff who in North America and Britain are called health physicists—health workers " equipped to handle, interpret and control this beneficial but, at the same time, potentially harmful force ". Three levels of technical personnel of this type are often employed in the larger atomic energy installations: the " radiation surveyor ", who performs the routine work and whose task is to detect and measure gross radioactivity and to appreciate radiation hazards; the supervisor, or junior health physicist, who is responsible for radiation control beyond the routine stage; and the specialist, or senior health physicist, who is charged with the broader aspects of radiation programmes, including consultative functions with respect to design of facilities.

The largest group will be the technicians, or radiation surveyors. Their training need not be extensive and may begin with in-service training in institutions where radioactive materials are utilized.

The supervisor should have training equivalent to a Master's degree, generally based upon major work in physics, chemistry, or engineering, perhaps with the final year concentrated upon atomic and nuclear physics, specialized biology as related to the nuclear field, and courses in electronics and related subjects. He should become proficient in dealing with radiation hazards, principles of measurement of ionizing radiations, measurements of radioactive isotopes as dust or gas in the air, decontamination of surfaces contaminated with radioactive isotopes, and similar subjects.

The specialist should have education equivalent to a doctorate and, in addition, a knowledge of psychology and experience of an administrative nature. His training should be both formal and in-service and cannot be fixed in terms of years.

The World Health Organization attaches particular importance to the question of training, and has studied the means by which it could adapt its methods and its general programme of professional training to the requirements of this new discipline. By the award of study fellowships, by assistance to educational institutions, by demonstration projects, by sending visiting professors, or by the exchange of scientific information, WHO could help governments, at their request, to complete the training of relevant personnel.

WHO has made a limited survey of education and training activities in the health and medical uses of nuclear energy in a number of countries—Canada, France, the United Kingdom, and the USA—and anticipates an extension of this survey.

During the recent Geneva Conference on the Peaceful Uses of Atomic Energy, informal talks showed the need for a health physics course for various European countries which were starting large-scale atomic energy work for the first time. In this way some of the very considerable health physics experience which the United States, in particular, has accumulated in dealing with her atomic energy programme could be passed on to these other countries. WHO was able to make this possible by providing financial backing with fellowships and other means, and is helping in the organization of a course which is to take place in Stockholm during November and December 1955. The course director and assistant director will come from the United States, and there will be a lecturer from England and another from France. This is thought to be the first international course on health physics ever organized, and plans are being made for a further course in the future.

The dissemination of pertinent public health information

There is at present a vast body of knowledge concerning the radiological health problems associated with nuclear energy. For various reasons this knowledge is not available in a co-ordinated and condensed form. In order to remedy this situation, it is necessary for the existing information to be co-ordinated and made available to those requiring it. The effort necessary to do this would be considerable and worthy of the attention of an international organization such as WHO. With the help of the experts in all parts of the world with whom the Organization maintains a network of communications, it is proposed that a list be established of important public health questions which would then be submitted for the examination of groups of international authorities in the various branches of knowledge concerned. There would, of course, be close collaboration with existing national and international scientific institutions. Thus the Organization would in this field, as in others, be playing primarily the role of promoter and co-ordinator. WHO's publications could also help in the dissemination of information collected in this manner.

Research

The third aspect of the programme would be the promotion of a world-wide scientific study of the somatic effects of low-level radiation on human beings in relation to the intensification of the radiation background. Although a great deal of work has been done on animals, more human data obtained from, for instance, patients submitted to radiation therapy or workers in the uranium mining industry would be most desirable.

The fourth point of the programme would be to encourage similar studies of radiation-induced genetic effects in the human race. This is an extremely difficult problem, and a clear method of attack is not evident, but promising lines should be further discussed among representatives of the considerable number of different sciences involved. There is the possibility, for instance, that it would be practicable to measure the incidence of certain well-worked-out congenital conditions in areas of the earth with a relatively high natural background of radiation, although this would have to be undertaken in countries with adequate demographic information. Another possibility would be to make a genetic study of the children of those whose gonads had been exposed to therapeutic irradiation.

Animal genetic research is, of course, always continuing; but it remains to be seen how far the results obtained are applicable to man.

Whether the study be of human somatic or genetic effects, opinion in WHO is that an essential element in many lines of research would be a uniformity of work methods and standards so that results might be comparable internationally.

Epidemiological and Vital Statistics Report

The most recent number of the *Epidemiological and Vital Statistics Report* (1955, Vol. 8, No. 9) is devoted to statistics on mortality from ulcers of the stomach and of the duodenum, from pneumonia, and from bronchitis ; to monthly data on smallpox cases and deaths in certain countries and territories in 1953, 1954, and, in some instances, 1955 ; to cases of smallpox reported in various countries and territories since 1921 ; and to cases of trachoma reported in various countries and territories since 1945.

CLINICAL TRIALS OF ANTIRABIES SERUM

Even within recent years, treatment by antirabies vaccine had been shown to be powerless to prevent the fatal outcome of rabies in an appreciable proportion of patients who had been bitten in the head by rabid animals, particularly wolves.[1] The antibodies induced in the organism by the vaccine apparently formed too slowly to counteract the development of the virus introduced by a bite close to the nerve centres. A solution to this problem, which was acute in certain countries where the risks of serious wounds were great, was urgent.

The WHO Expert Committee on Rabies began to consider this problem in 1950. It recommended the study of certain prophylactic substances which had given encouraging results in the laboratory, in particular of antirabies serum of high antibody level (hyper-immune serum). In addition, it recommended that a field trial should be undertaken, as soon as conditions permitted, to determine the practical value of this serum combined with vaccine in the treatment of rabies in man.

Iran was chosen as the country for the investigation. Attacks on villagers by rabid wolves were not infrequent there: between 1936 and 1949, 325 persons bitten by rabid wolves—186 of them bitten in the head—had come to the Institut Pasteur in Teheran for treatment. Often there were series of cases, as many as 40 persons having been bitten. From 1950 to 1954, however, only isolated cases occurred; and, in spite of the success of combined serum-vaccine treatment, the results were too fragmentary to enable definite conclusions to be drawn.

But, in August 1954, a rabid wolf suddenly appeared in a village in Iran and created a dramatic situation which afforded an opportunity for a conclusive experiment. Dr M. Baltazard, Director of the Institut Pasteur of Iran (Teheran), who was in charge of this study, has given an account of it which is soon to be published.[2]

Dr Baltazard describes as follows the attack of the wolf:

> During the night of 21-22 August 1954, at about 1 a.m., a large wolf penetrated into the sleeping village of Sahané, situated on the international route which runs from Teheran to Baghdad and Damascus. Being half-way between the towns of Hamadan and Kermanshah, Sahané is a fairly frequented stopping place, and on the night in question a dozen or so trucks and motor-buses had halted there. The drivers and passengers were sleeping either inside the *ghavehkhanehs* (inns), or outside, on account of the heat....
>
> The wolf, descending from the mountains, approached Sahané from the north-east through the orchards and vineyards where there are no houses but where, at that time of the year, the guardians who keep watch on the fruit sleep. The animal made its way south, jumping the low earth walls and spiky hedges and attacking 13 people, one after the other. Most of them were lying down, which explains why many of them were bitten in the head....
>
> This attack on people in the orchards and vineyards went on for more than two hours. Cries were heard in all directions, and in the midst of the confusion lanterns were lit and a hunt organized. In the meantime, however, the wolf had reached the village itself. One of its victims was a blind beggar who was sleeping in the street. It penetrated into the bazaar and attacked a person sleeping inside a house, the door of which had been left open. From there the beast jumped into a courtyard and on to the terraces of the houses, which are very low, and attacked an old woman. At this point it disappeared, and it is not known whether it went first to the east, where three people were attacked, or to the west. At the end of the night it was on the main road itself, to the west of Sahané... where the lorries and motor-buses were stationed in front of the darkened *ghavehkhanehs*. The animal bit three passengers and a driver,

[1] See article by Baltazard, M. & Ghodssi, M. (1954) *Bull. Wld Hlth Org.*, **10**, 797.

[2] Baltazard, M. & Bahmanyar, M. (1955) *Bull. Wld Hlth Org.*, **13** (in press)

TABLE I. CLINICAL AND SEROLOGICAL RESULTS OF TREATMENT WITH ANTIRABIES SERUM AND VACCINE

Series	Number of cases	Treatment *	Number of deaths from rabies	Serological observations
	5 (4 very serious)	Serum: 1st and 5th days Vaccine: 21 days	0	Antibodies in all during first 5 days. Intermediate level maintained up to 21st day, subsequent decline up to 53rd day. One subject with high level from 21st to 53rd day
A	1 (very serious) (Fig. 1)	Serum: 1st, 3rd, 5th, 7th, 9th, and 11th days Vaccine: 21 days (Penicillin treatment of secondary infection)	0	High level of antibodies during whole period of observation
B	7 (4 very serious)	Serum: 1st day Vaccine: 21 days (except in case of one who died on 16th day)	1	Antibodies during first 5 days. Low level in 4 subjects. In fatal case, traces only after 7th day
C	5 (3 very serious)	Vaccine: 21 days	3	No antibodies before 19th day. Present in 3 subjects between 21st and 25th day (1 death). No antibodies in 2 cases, 1 fatal

*** Serum: rabbit serum prepared by the Lederle Laboratories, Pearl River, N.Y., USA, injected at the rate of 0.65 ml per kg of body-weight (maximum 50 ml) in the muscle of the buttock.**
Vaccine: phenolized vaccine (sheep brain, 5 %; phenol, 0.6 %), 5 ml daily by subcutaneous abdominal injection.

fought with a dog, and then attacked a fruit merchant in his shop ; it left the main road and passed behind the houses to the south of the village, where it attacked a traveller resting in a garden, and went on towards the south. The next victim was a policeman on his early morning rounds. By this time the wolf was exhausted and had hardly any strength left for attack. It nevertheless bit a group of six cows grazing in a field (three of these died of rabies, and the other three were slaughtered) ; its last victim was a horse on which a peasant armed with a mattock was mounted. The man jumped from his horse and killed the wolf with about ten blows of his mattock.

Emergency aid was given to the victims in the small, local hospital; and a few hours afterwards, 27 persons (of the 29 bitten) were sent by truck to Teheran, which they reached within 32 hours after they had been bitten. Two others arrived later, one of them about 100 hours after being bitten. Eleven of the victims were bitten in the trunk or limbs, and 18 in the head. The treatment of the latter, and the results of the treatment, are summarized in table I.

There were no deaths among those bitten in the trunk or limbs, whether they were given serum + vaccine, or vaccine alone. These results confirmed observations made during the past thirteen years at the Institut Pasteur in Teheran that treatment of persons bitten in the trunk or limbs is very effective.

Of the subjects bitten in the head who received a single injection of serum, one out of seven died ; the patient who was treated about 100 hours after the bite was among the survivors. There were no deaths among five serious cases which received two injections of serum. The most striking case was that of a boy six years old whose parietal bone had been smashed and the *dura mater* torn by the wolf's teeth, but who, in spite of this "intracranial inoculation", resisted the the infection as a result of six injections of serum combined with vaccine treatment (see fig. 1). Examination of these cases showed that the wolf's bites remained virulent from

FIG. 1. CLINICAL TRIALS OF ANTIRABIES SERUM

Young boy, very seriously bitten (see text), who did not contract the disease

the beginning to the end of the attack, i.e., for about four hours. The virus was isolated from the brain of the wolf.

SEROLOGICAL STUDY

The clinical study of the cases treated with either vaccine alone or vaccine + serum was supplemented by serological examinations. From the beginning of treatment up to the 53rd day, in some cases, serological samples were taken at fixed intervals and subjected to the mouse neutralization test to ascertain their antibody level. The results of these tests, carried out by Dr K. Habel and Dr H. Koprowski, are also to be published.[3]

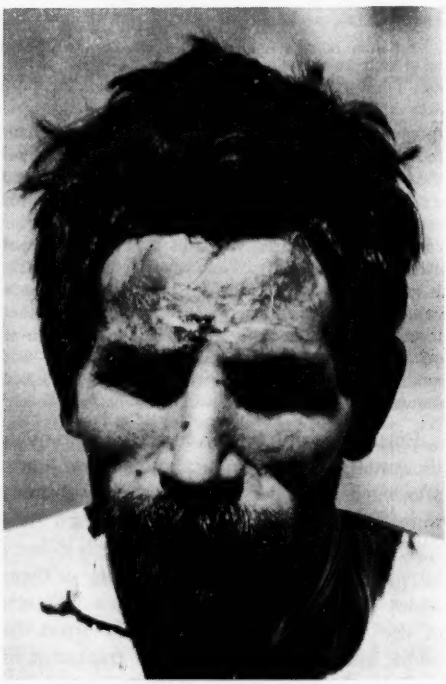
The authors sought to correlate the level of neutralizing antibodies present in the serum of the treated victims with the evolution of the disease. Table I gives a brief summary of their observations.

[3] Habel, K. & Koprowski, H. (1955) *Bull. Wld Hlth Org.*, 13 (in press)

The results indicate clearly that, in the case of head bites, the combined administration of serum and vaccine gives more effective protection than vaccine treatment alone. In general, it appears that the passive antibodies introduced into the blood after the bite hold the infection in check until the antibodies produced by the vaccine come into action.

In discussing these results and the various biological processes involved, the authors stress a number of points. Three sources of antibodies and the interaction of a number of factors must be considered in connexion with the immunological phenomena which develop from the beginning of treatment up to cure or death of the patient.

FIG. 2. CLINICAL TRIALS OF ANTIRABIES SERUM



One of the survivors from series B

The passively administered antibodies introduced by injection of serum into the organism very quickly produce in the blood of the victim a certain level of protection, low or intermediate depending upon the potency of the serum. This protection level tends gradually to decrease with excretion and destruction of the foreign serum. Side by side with these passive antibodies, there are antigens in the blood : the vaccine inoculated with the serum, and, possibly, street virus introduced by the bite of the rabid animal. The body's defence will depend to some extent on the response to these antigens. Response to the vaccine generally appears between the 14th and the 21st days in the course of vaccine treatment. The potency of the vaccine and the patient's ability to produce antibody are limiting factors which may decide the outcome. In some cases there is hardly any reaction at all to the antigen stimulus. This was so with regard to two of the patients in series C, one of whom died, and with regard to the only fatal case in the B series.

As far as the antigen introduced by the bite is concerned, there is no way of knowing —except in fatal cases—when the bite introduces a sufficient quantity of rabies virus for multiplication to begin, the quantity of virus produced by multiplication, or when multiplication ceases. It is probable that this antigen arouses a serological response which is as effective as, if not more effective than, that produced by the vaccine.

The interplay of these various factors makes it impossible to dissociate their effects and to determine the role played by each. For example, it is not possible to distinguish, after the 21st day, the part of the antibody due to the vaccine and that of the antibody resulting from multiplication of the street virus.

Epidemiological and Vital Statistics

A recent number of the *Epidemiological and Vital Statistics Report* (Vol. 8, No. 8) contains statistical tables on a variety of subjects, including natality and general mortality in a number of countries since 1951, infant mortality and neonatal mortality for the same period, and natural increase from 1951 to 1954; deaths from paralysis agitans (Parkinson's disease) in certain countries since the first available year, which varies from country to country; and cases of, and deaths from, cholera, poliomyelitis, and influenza in various countries since 1953. This number also contains an addenduum to the statistical information on deaths from epilepsy which was published in Vol. 8, No. 6.

A QUANTITATIVE STUDY OF MEDICAL SCHOOLS AND PHYSICIANS

As medical schools are the sole "producers" of physicians, their activities, viewed quantitatively, are of interest and importance in assessing how adequately the health needs of populations in different parts of the world are met in terms of the number of physicians available. In addition, if the annual number of graduates of these schools is taken into consideration, some idea of the future medical coverage of the population can be gained. A recent statistical survey of medical schools and physicians, published in the *Bulletin of the World Health Organization*,[1] compares the number of medical schools and of physicians with the population served.

Table I summarizes the data presented in this study.

Space does not permit reproducing the tables for all of the regions, but the two tables which follow are representative of the information presented and include many of the countries with a long tradition in medical education.

These figures, though they are in many cases incomplete or are simply estimates, may be of value to health officials and other persons concerned with the over-all planning of health and medical services.

The 595 medical schools are located in 85 countries, with a wide range of populations served. The data show that nine countries have one medical school for less than 1 million inhabitants, and that 13 have one medical school for 9-17 million of the population. Many millions of people live in countries in which there is no medical school.

There are more than a million physicians, a figure to which must be added from 50 000 to 60 000 graduates of medical schools each year. But the distribution of these physicians in relation to the population of individual countries is most unequal. For example, 14 countries have one doctor for less than 1000 inhabitants, whereas in

[1] Troup'n, J. L. (1955) *Bull. Wld Hlth Org.*, 13, 345

TABLE I. POPULATIONS, MEDICAL SCHOOLS, AND PHYSICIANS BY CONTINENTAL AREAS

Area	Population	Number of medical schools	Population per medical school	Number of physicians	Population per physician	Annual number of medical graduates
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Africa	211 851 000	14	15 132 000	23 253	9 111	855
America, North	233 872 000	122	1 917 000	247 220	946	8 930
America, South	120 731 000	51	2 367 000	48 202	2 505	3 733
Asia, Eastern	1 370 961 000	152	9 020 000	201 502	6 804	11 582
Asia, Western	83 112 000	13	6 393 000	16 970	4 898	859
Europe	614 831 000	237	2 594 000	643 144	956	27 177
Oceania	13 910 000	6	2 318 000	12 083	1 151	753
	2 649 268 000	595	4 453 000	1 192 374	2 222	53 889

22 countries the ratio is one doctor to 20 000 or more of the population. However, these figures do not take into account the fact that some of the doctors included are actually non-practising, that they are engaged in teaching, research, administration or similar activities. Other factors which cannot be taken into consideration in such an analysis are the socio-economic development of the country, the distribution of doctors within the country, and the auxiliary and ancillary health personnel available, all of which are important.

Despite the limitations of this purely quantitative study, it serves to give a picture of the present situation and developments, and to show where it is most necessary to increase the number of doctors, by whatever means are feasible—importation, increasing the capacity of existing medical schools or creating new ones, or arranging for study abroad. Each of these solutions poses particular problems for the countries concerned, and " those who are responsible for charting the course of medical education must strike a balance on the basis of a comprehensive study, the nature of which is only hinted at here ".

TABLE II. POPULATIONS, MEDICAL SCHOOLS, AND PHYSICIANS IN NORTH AND CENTRAL AMERICA

Country (1)	Population (2)	Number of medical schools (3)	Population per medical school (4)	Number of physicians (5)	Population per physician (6)	Annual number of medical graduates (7)
Panama	863 000	1	863 000	238	3 626	20
Nicaragua	1 202 000	1	1 202 000	520	2 312	18
Canada	15 236 000	12	1 270 000	15 400	989	767
Jamaica	1 486 000	1	1 486 000	322	4 615	30 *
Honduras	1 564 000	1	1 564 000	232	6 741	10
Mexico	28 850 000	16	1 803 000	11 522	2 504	600 *
USA	162 701 000	84	1 934 000	209 481	777	7 200 *
Salvador	2 122 000	1	2 122 000	332	6 392	11
Puerto Rico	2 229 000	1	2 229 000	1 012	2 203	45
Dominican Republic	2 347 000	1	2 347 000	764	3 072	66
Guatemala	3 049 000	1	3 049 000	497	6 135	25
Haiti	3 227 000	1	3 227 000	300	10 756	38
Cuba	5 807 000	1	5 807 000	5 600	1 037	100 *
UK Territories (not otherwise listed)	1 526 000	—	—	409	3 731	—
Costa Rica	915 000	—	—	319	2 868	—
French Territories	545 000	—	—	134	4 067	—
Netherlands Antilles	178 000	—	—	120	1 483	—
Greenland	25 000	—	—	18	1 389	—
	233 872 000	122	1 917 000	247 220	946	8 930

* Estimated.

TABLE III. POPULATIONS, MEDICAL SCHOOLS, AND PHYSICIANS IN EUROPE

Country	Population	Number of medical schools	Population per medical school	Number of physicians	Population per physician	Annual number of medical graduates
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Iceland	150 000	1	150 000	181	829	20
Malta	320 000	1	320 000	286	1 119	37
Ireland	2 933 000	5	587 000	2 921	1 004	288
Saar	976 000	1	976 000	711	1 373	30
Switzerland	4 939 000	5	990 000	4 942	999	374
Norway	3 359 000	2	1 680 000	3 506	958	100
France	42 882 000	24	1 787 000	37 432	1 146	2 800*
Sweden	7 212 000	4	1 803 000	5 230	1 379	285
United Kingdom	51 043 000	27	1 890 000	44 570	1 145	2 400*
Finland	4 192 000	2	2 096 000	2 129	1 969	150
Netherlands	10 609 000	5	2 122 000	9 000	1 179	600*
Denmark	4 402 000	2	2 201 000	4 520	974	300
Belgium and Luxembourg	9 082 000	4	2 270 000	8 971	1 012	428
Italy	48 447 000	21	2 307 000	57 610	841	3 200*
Austria	6 954 000	3	2 316 000	10 771	646	549
Hungary	9 600 000	4	2 400 000	11 400	842	160
Poland	26 500 000	10	2 650 000	14 183	1 868	600*
Germany, Federal Republic	51 749 000	18	2 875 000	68 135	760	3 300*
Spain	28 756 000	10	2 876 000	28 412	1 012	1 000*
Portugal	8 693 000	3	2 898 000	6 249	1 391	200*
Romania	16 500 000	5	3 300 000	12 500*	1 320	300*
Germany, Democratic Republic	20 000 000*	6	3 333 000	12 000*	1 667	300*
USSR	207 000 000	61	3 393 000	273 000	758	8 000*
Yugoslavia	17 288 000	5	3 458 000	5 138	3 365	1 076
Czechoslovakia	14 429 000	4	3 607 000	9 917	1 455	400*
Bulgaria	7 450 000	2	3 725 000	1 800	4 139	80*
Greece	7 819 000	2	3 910 000	7 300	1 071	200*
Albania	1 250 000	—	—	100*	12 500	—
Trieste	297 000	—	—	200*	1 485	—
	614 831 000	237	2 594 000	643 144	956	27 177

* **Estimated.**

Reports of Expert Groups

MEAT HYGIENE

The present world scarcity of protein foods emphasizes the importance of making the most of the meat supplies which are available and of ensuring that the meat is safe for human consumption. Even in countries where the level of hygiene is relatively high, more than half of the epidemic illnesses due to food are caused by meat, especially by processed meat.

A WHO/FAO joint committee of experts composed of medical officers, hygienists, and veterinarians studied a number of problems relating to meat hygiene, in particular means for improving slaughtering techniques, inspection of meat, and laboratory control. In its first report,[1] this committee puts forward a number of recommendations which could be implemented both in economically developed and in less-developed countries.

The pathogenic agents found in meat are the result of either a primary infection present in the carcass of the animal, or a secondary infection due to human or environmental contamination. The agents in question are micro-organisms such as *Salmonella sp.*, parasites such as *Trichinella spiralis*, or the products of living micro-organisms (e.g., staphylococcal enterotoxin). Brucellosis, botulism, gastro-enteritis, salmonellosis, shigellosis, and tuberculosis are among the main diseases for which these pathogenic agents are responsible.

Some meat-borne diseases create serious public-health problems. Mild forms of bacterial anthrax, for example, cannot be diagnosed by clinical examination alone, and the laboratory has not yet provided reliable diagnostic criteria. In regions where cysticercosis is highly enzootic, the methods of inspection so far adopted (additional cuts in the diaphragm and shoulder muscles) are still inadequate, as they may allow infested carcasses to be passed over. When dogs are allowed to penetrate into abattoir premises (which happens particularly in rural areas) and when the organs which carry hydatid cysts are not burned or sterilized, the spread of hydatidosis is assured. Finally, with regard to trichinosis, although there are effective methods of controlling the disease, there are as yet no reliable and easy tests for detecting infestation in live pigs.

In order to determine with certainty the etiology of a food-borne disease, all the bacteriological and epidemiological factors present must be thoroughly studied. It is not sufficient, for example, to know that there are large numbers of staphylococci in a sample : one should know whether they are coagulase positive, what their phage type is, and whether they are toxicogenic; in addition, a typical clinical syndrome is observed in man. In all epidemic outbreaks of food poisoning it is essential to attempt isolation of the micro-organism in both the patient and the suspected food.

The risk of " accumulation " of pathogenic micro-organisms of intestinal origin introduced by germ-carriers—men or animals —is considerable in slaughterhouses, and for this reason it is essential that the structural and sanitary arrangements of such establishments should be up to the necessary standard. It is recommended in the report that a small technical committee be set up to work out detailed plans for standard abattoirs.

In countries where infectious diseases such as typhoid and paratyphoid fevers and shigellosis are prevalent, the risk of spreading infection by the handling of meat might be reduced very considerably if workers were kept permanently on given tasks and subjected regularly to clinical and bacteriological examination. This is frequently not possible,

[1] *Wld Hlth Org. techn. Rep. Ser.*, 1955, 99. 52 pages. Price: 3/6, $0.60, or Sw. fr. 2.—. Published in English, French, and Spanish.

however, and it is much more preferable to encourage the practice of careful personal hygiene on the part of food handlers.

Although the principles of meat hygiene may be the same in all countries, the question of establishing standards which could be applied in different communities raises certain difficulties. There are listed in the report certain measures which are absolutely indispensable if meat supplies are to be safe :

(1) examination of the animal before slaughter to assure the elimination of unfit animals ;

(2) examination of the carcass and parts of carcass immediately after slaughter to separate for human food the normal, wholesome product from diseased or otherwise unfit material ;

(3) removal and destruction of all diseased and otherwise unfit materials to assure their elimination from the food supply ;

(4) separation from edible products of all unfit materials in a way that will avoid contamination of the edible products by the unfit materials ;

(5) adoption of such environmental sanitation controls as will ensure against the contamination of edible products ;

(6) prohibition against the addition of harmfu materials in the handling and preparation of the edible products.

Notification of cases of food poisoning and food-borne diseases should be made compulsory. However, although notification would provide some idea of the incidence of such diseases, the public health physician—if he is to take appropriate steps—needs to know which are the pathogenic agents most frequently responsible and which the incriminated foods. Only systematic surveys in each separate case will provide him with this essential information. The medical practitioner, the patient and his immediate contacts, those who have handled the food—all must be interrogated. The analysis laboratories should issue instructions as to the nature of the samples to be taken and the manner in which they should be transported.

The energetic application of general hygiene measures, stimulated by consumer demand, will assist public health authorities greatly in improving meat hygiene and in reducing unnecessary losses in meat.

Notes and News

African Seminar on Environmental Sanitation

The WHO Regional Office for Africa is organizing a seminar on environmental sanitation, to be held at Ibadan, Nigeria, from 12 to 17 December 1955. Most of the countries of the Region have been invited to send representatives, who will include medical personnel at the policy-making level and engineers from public works and municipal departments. Other agencies, such as the Commission for Technical Co-operation in Africa South of the Sahara (CCTA), have been invited to send observers.

The general purpose of the seminar is to bring together professional leaders who are engaged in Africa in various aspects of environmental control and to stimulate the team approach in the administration and execution of sanitation programmes. The subjects to be discussed are : (1) the principles of environmental control and its relationship to public health, (2) some epidemiological relationships of sanitation, (3) the sanitary evolution of a developing country, and (4) ways and means of carrying out environmental sanitation programmes. It is hoped that the discussions will throw light on the real scope and potentialities of environmental sanitation and on the important role which engineers can play, in partnership with medical officers of health, in the planning and execution of sanitation programmes.

Two consultants are assisting the Regional Office in preparing for the seminar : Dr John A. Logan, Professor of Sanitary Engineering and Head of the Department of Civil Engineering, Northwestern University, Illinois, USA, and Mr Walter Sanches, Assistant Superintendent, Serviço Especial de Saúde Pública, Rio de Janeiro, Brazil. They will be joined at the seminar by two temporary advisers who will assist as discussion leaders : Médecin-Général M. A. Vaucel, Inspecteur Général des Instituts Pasteur d'Outre-Mer, Paris, France, and Mr Peter C. G. Isaac, Lecturer in Public Health Engineering, University of Durham, Newcastle-upon-Tyne, England. The WHO Regional Office for the Eastern Mediterranean will be represented by its adviser on environmental sanitation, Mr John O. Buxell.

Regional Committee for Africa

The fifth session of the Regional Committee for Africa was held from 19 to 24 September 1955, in Tananarive, Madagascar. Chairman of the session was Médecin-Colonel Pierre M. Bernard, of the Direction du Service de Santé de la France d'Outre-Mer; Dr G. J. Janz, Professor at the Institute for Tropical Medicine at Lisbon, Portugal, was Vice-Chairman.

As at the other regional committee meetings, the chief items on the agenda were the annual report of the Regional Director on the activities of the past year and the programme and budget for 1956 and for 1957, all of which were approved by the Committee. The programmes for the next two years are expected to be financed approximately as follows: combined WHO regular budget and funds from United Nations Technical Assistance—1956, US $1 196 000; 1957, $1 360 000; UNICEF—1956, $1 825 000; 1957, $3 388 500.

Emphasis was laid in Africa, as in the other regions, on plans for the eradication of malaria.

Technical discussions held as part of the Committee's meetings dealt with the health problems of the pre-school-age child in Africa and the role of the nurse in solving these problems. The child in Madagascar occupies a privileged social position and is relatively better cared for; but as elsewhere in Africa, infants are often looked after by older children. The discussions stressed the importance of training African public health

visitors who could win the confidence of the people and give instruction in child care, and of establishing health centres where mothercraft could be taught.

It was decided that the subject of next year's technical discussions would be practical means of tuberculosis control in Africa, a problem of considerable importance in the Region.

The next session of the Regional Committee will be held at Luanda, Angola, from 24 to 29 September 1956.

Survey of Paediatric Education in Latin America

The Pan American Sanitary Bureau, which acts as WHO Regional Office for the Americas, is conducting a survey of paediatric education in Latin America, similar to surveys which have been carried out in the USA, Canada, Western Europe, Australia, and New Zealand. The Latin American survey, covering 21 countries and approximately 75 schools, is under the general direction of Dr Myron E. Wegman, Chief of the Division of Education and Training of the Bureau, and formerly Professor of Paediatrics at Louisiana State University. Dr James G. Hughes, Professor of Paediatrics at the University of Tennessee, is acting as special consultant for this programme and is visiting a large number of schools.

Endorsement of the programme has been given by the International Paediatric Association and the American Academy of Paediatrics, whose country chairmen and secretaries are collaborating in the gathering of information.

Seminars in the Americas

Sanitary engineering

The Pan American Sanitary Bureau is sponsoring a seminar on sanitary engineering for engineers from Mexico, Haiti, the Dominican Republic, Cuba, and other countries in the Caribbean, to be held in Puerto Rico early in November 1955.

International Sanitary Regulations

A seminar on the International Sanitary Regulations, sponsored jointly by the Pan American Sanitary Bureau and the Government of Costa Rica, was held in San José from 22 to 26 August 1955. It was attended by health officials from Costa Rica, Cuba, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, and the USA.

The seminar afforded the participants an opportunity to discuss the application of the International Sanitary Regulations, to study the amendments approved by the Eighth World Health Assembly, and to establish procedures for reporting cases of quarantinable and other communicable diseases. It was of particular interest in marking the first general discussion of the revised Regulations adopted by WHO in 1955.

Latin American Centre for Classification of Diseases

Formal announcement has been made of the establishment of the Latin American Centre for the Classification of Diseases. The Centre is located in Caracas, Venezuela, in the Ministry of Health and Social Welfare, and is under the immediate direction of Dr Darío Curiel, Chief of the Division of Epidemiology and Vital Statistics. It is operating under the joint sponsorship of the Government of Venezuela and the World Health Organization.

This centre follows the pattern laid down by the WHO Centre for the Classification of Diseases which was established by WHO in 1951, in London, attached to the General Register Office of England and Wales. The value of the first centre in solving problems of general interest in the classification of diseases pointed to the desirability of establishing a similar one in the Americas, considering especially the problems in the Spanish-speaking countries and the use of the Spanish version of the International Classification of Diseases, Injuries, and Causes of Death. A training course on the coding of causes of death was held at the Latin American Centre in mid-September 1955.

Regional Committee for the Americas

The eighth meeting of the Directing Council of the Pan American Sanitary Organization, which is composed of delegates from the 21 American Republics and representatives of 3 European governments, was held in Washington, D.C., from 9 to 21 September 1955, under the chairmanship of Dr. Héctor A. Coll, Director General de Medicina Sanitaria of Argentina. This meeting was, at the same time, the seventh session of the WHO Regional Committee for the Americas.

The Council unanimously approved the report on the work of the Pan American Sanitary Bureau, which acts as WHO Regional Office for the Americas. In 1954 the Bureau collaborated with the administrations of 27 countries and territories in carrying out 77 national health programmes, 30 inter-country and continent-wide programmes, and 6 inter-regional projects which form a part of WHO health programmes conducted throughout the world. The Bureau's efforts were directed particularly towards the control and eradication of communicable diseases, the co-ordination of all public health services, the strengthening of health administrations so as to make them gradually less dependent on international assistance, and the training of health personnel.

The Bureau has established in Mexico City a co-ordination office for the malaria eradication programme in the Western hemisphere.[1] The reports of governments on progress in malaria control confirm the need to carry out a large-scale campaign against anopheline vectors of the disease before these vectors acquire resistance to residual insecticides.

The programme of work for 1956, comprising 130 projects in all, includes campaigns for the eradication of yaws (this is in the final stages in Haiti), smallpox, venereal diseases, and the *Aëdes aegypti* mosquito, urban vector of yellow fever; programmes in tuberculosis control, environmental sanitation, public health nursing, maternal and child health, nutrition, and the education and training of health personnel; the award of 300 fellowships; and the organization of several seminars to facilitate the exchange of views among health officials from various countries.

The Council approved this programme, which will be financed by a budget of US $2 200 000; there will also be available about $1 180 000, already allocated to the Region by WHO for 1956, and other funds, notably from United Nations Technical Assistance funds and from UNICEF.

After having studied the proposed programme and budget for 1957, the Council recommended that WHO make provision for a budget of approximately $1 300 000 for the Region of the Americas. This proposal will be submitted for the consideration of the Ninth World Health Assembly.

To enable the PASB to draw up programmes for long-term inter-country activities corresponding to the needs of several or all of the countries of the Region, the Council requested those governments that had not yet done so to draft public health programmes and budget estimates for the years 1957-60.

Discussion of long-range programmes for the control of communicable diseases revealed a definite tendency towards eradication campaigns; a number of representatives stressed that eradication, where possible, is the only logical public-health approach.

This year the technical discussions were devoted to two topics: "Methods of Improving the Education of Public Health Personnel", and "Medical Care in Rural Areas."

The next meeting of the Directing Council will take place in the autumn of 1956 in Guatemala.

Regional Committee for South-East Asia

The eighth session of the WHO Regional Committee for South-East Asia was held from 5 to 10 September 1955 in Bandung, Indonesia. Dr Saiful Anwar, of Indonesia, was Chairman, and Dr Sombun Phong Aksara, of Thailand, was Vice-Chairman.

[1] See *Chron. Wld Hlth Org.*, 1955, 9, 242.

The meeting brought together delegates from Afghanistan, Burma, Ceylon, India, Indonesia, Nepal, Portugal, and Thailand. Representatives of the United Nations, the United Nations Technical Assistance Board, UNICEF, the Food and Agriculture Organization, and UNESCO participated. Observers for a number of inter-governmental and non-governmental organizations in official relationship with WHO, as well as observers for the US International Co-operation Administration (formerly, the Foreign Operations Administration), were also present.

Main agenda items

The most important items on the agenda during the six-day session were WHO's programme and budget for 1957 in the Region and a number of questions relating to national programmes against communicable diseases, such as malaria and tuberculosis. The annual report of the Regional Director was discussed in detail and approved.

Separate technical discussions on tuberculosis filled two entire days of the meeting. Problems of environmental sanitation, health education of the public, and the training of auxiliary health workers also received heavy emphasis in this year's session, continuing a trend which has become more pronounced with each meeting of the Committee for the past several years.

Programme and budget for 1957

The 1957 programme, as agreed upon by the Regional Committee after detailed scrutiny on a country-by-country basis, calls for an expenditure in South-East Asia totalling about US $1 400 000 under the WHO Regular Budget. In addition, an outlay amounting to approximately US $4 500 000 is envisaged for WHO-assisted projects in the Region which would be financed (apart from sizable investments by the governments themselves) from funds expected to be available under the UN Technical Assistance Programme and from UNICEF.

Following approval by the Regional Committee, the proposed programme and budget for 1957 for South-East Asia will be co-ordinated at Headquarters with proposals made by the other five regional committees and will then be submitted by the Director-General to the Ninth World Health Assembly, which is scheduled to meet next May in Geneva.

The Organization's plan of work in South-East Asia for 1957, based upon specific requests put forward by the Member States of the Region, is designed primarily to strengthen further the various national health services. Comprising some 150 separate but largely interrelated projects, the programme shows major emphasis on assistance by WHO to the Member States (in many cases with substantial amounts of supplies and equipment from UNICEF) in the training of personnel and in other basic fields such as health education of the public and environmental sanitation.

Training of health workers

Delegates were unanimous in the view that among the most critical problems facing health services practically everywhere in South-East Asia is the acute shortage of physicians, nurses, and other health workers of all types. It was pointed out that, owing to the lack of facilities for medical education, an adequate number of doctors would not be available in most countries of the Region for at least another twenty to thirty years. The only possibility of building up the health services rapidly was therefore to train, in large numbers, auxiliary and paramedical personnel equipped to perform certain essential tasks (under the supervision of qualified medical practitioners), particularly in respect of health education, maternal and child health, and elementary medical care.

In view of this situation, special interest was manifested in a new plan for the large-scale training of " sub-professional " health personnel which was outlined before the Committee by Dr J. Leimena, Indonesia's Minister of Health. Under the new scheme developed for his country, Dr Leimena explained, it was hoped that over a period of ten years about 200 000 " low-level " workers could be trained.

Problems of malaria eradication

With regard to malaria, the Regional Committee considered the implications of the fact that some species of anophelines are known to be developing resistance (both behaviouristic and physiological) to DDT where this insecticide has been used uninterruptedly for a number of years.

The delegates concurred fully in the views on the need for malaria eradication which were expressed by the Eighth World Health Assembly. They felt that governments in South-East Asia should make every effort to accelerate the pace and to widen the scope of their anti-malaria operations, taking eradication of the disease as the ultimate objective to be achieved as soon as possible. However, it was pointed out that in many countries of this Region tremendous practical obstacles would first have to be overcome —e.g., difficulties in communications and transport, and lack of facilities in rural areas for adequate diagnosis and for maintaining control when malaria transmission had been effectively interrupted.

The delegates were assured that both WHO and UNICEF, in collaboration with other agencies such as the US International Co-operation Administration, would render all possible assistance to national health services in tackling these urgent problems. For additional assistance from WHO, a number of specific proposals were adopted and are to be carried out under the special Malaria Eradication Fund which was established by the Eighth World Health Assembly.

Tuberculosis in South-East Asia

The two-day technical discussions, reviewing anti-tuberculosis measures now being carried out in the countries of South-East Asia, were presided over by Dr P. V. Benjamin, Tuberculosis Adviser to the Government of India. Among the recommendations which emerged from the discussions, and which will be circulated to health services throughout the Region, were the following: (1) that carefully planned surveys should be carried out on a national scale in order to determine the extent and the location of infective tuberculosis, (2) that the domiciliary treatment of tuberculosis should be encouraged whenever such treatment can be based on tuberculosis centres providing facilities for proper supervision and control, (3) that simply constructed institutions should be made available in all communities as a means of dealing with infectious cases which cannot be effectively isolated in the home, and (4) that scientific investigations should be undertaken with a view to ascertaining whether the newer anti-tuberculosis drugs can, in fact, be used effectively on a mass scale for tuberculosis control.

Forthcoming sessions

The Regional Committee decided to hold its ninth session at the seat of the Regional Office in New Delhi, and its tenth session, in 1957, in Burma. It was agreed that in 1956 the technical discussions would be devoted to health education of the public—a subject considered to be of greatest importance in South-East Asia.

Regional Committee for Europe

The fifth regular session of the Regional Committee for Europe, which brought together representatives of 21 countries, was held from 5 to 8 September 1955 in Vienna, under the chairmanship of Dr A. Khaum (Austria).

The Committee noted with satisfaction the progress made in the implementation of WHO's European health programmes during the first half of 1955. In addition to separate assistance given to a number of Member States of the Region, about twenty courses, seminars, study groups, and surveys were organized by the Regional Office or with its help. These included a symposium on the education of sanitary engineers,[2] a seminar on mental health through public health practice,[3] a course on the treatment of acute forms of poliomyelitis,[4] and a meeting on veterinary public health.

[2] *Chron. Wld Hlth Org.*, 1955, 9, 148, 230
[3] *Chron. Wld Hlth Org.*, 1955, 9, 247
[4] *Chron. Wld Hlth Org.*, 1955, 9, 167

No amendment was made to the programmes for assistance to countries in 1956, and the proposals for 1957 concerning this part of the programme were adopted without alteration. This means that WHO will continue to collaborate in the control of trachoma and other communicable eye diseases [5] in Morocco, Spain, Tunisia, Turkey, and Yugoslavia (the number of persons suffering from such eye diseases in the countries of the European Region is estimated to be at least 8 millions); control of diphtheria in Austria; development of rural health in Greece; and the training of sanitary engineers in Portugal. The Organization will also continue to grant fellowships, under a programme in which more than two thousand fellowships for study and research have already been awarded.

New projects include the following: development of work already begun in the field of chronic degenerative diseases which constitute public health problems in Europe (e.g., diabetes, cancer, rheumatism, and cardiovascular diseases); prevention of accidents; study of certain mental health problems not yet sufficiently explored, such as medical aspects of delinquency and the mental health aspects of great disasters; and protection of workers and the general population against ionizing radiations.

The Regional Committee, being required to establish the guiding principles for the WHO programme in Europe for a further period of four years (1957-60), expressed the opinion that inter-country programmes were "the most appropriate method in Europe of assisting governments to strengthen their health services". It was decided that the chief aims during this period would be study of health problems common to the countries of the Region, exchange of experience, and development of services for the training of medical and health personnel. WHO should also continue to bring together different professional disciplines with joint responsibility in any health field, particularly where a tendency exists for such disciplines to work in isolation from one another. For example, the control of diseases of animals which are transmissible to man would be facilitated in a number of countries by closer liaison between physicians and veterinarians.

Examining the malaria situation in Europe, the Committee recognized that co-operation between governments was a prerequisite for the success of the world campaign for the eradication of this disease which is to be undertaken in accordance with the decision of the Eighth World Health Assembly. Consultations among the countries of south-eastern Europe are now proceeding in preparation for an inter-regional conference on malaria to be held in Athens next year.

The theme of the technical discussions at this session was the question of the changes in health services necessitated by the aging of the population. The discussions at the next session will have as subject the prevention of accidents in the home.

The Committee took note of the conclusion of a host agreement between the Government of Denmark and WHO, and of the fact that it is anticipated that the Regional Office will be installed in Copenhagen in April 1957.

The next session of the Committee will be held in the autumn of 1956 in Rabat.

Seminar on Public Health Administration

To facilitate the exchange of knowledge and experience on the various problems of public health administration, and to promote mutual understanding of, and interest in, some of the common public-health problems in the Region, the Regional Office for the Eastern Mediterranean has arranged for a seminar on public health administration to take place in November 1955. Each government in the Region has been requested to designate a senior public health officer occupying a responsible position in the national health administration to participate in the seminar, and fourteen governments have complied with this request.

The seminar, which will cover a period of nineteen days, beginning on 15 November 1955, will include a general session at the Regional Office in Alexandria, where the

[5] *Chron. Wld Hlth Org.*, 1955, 9, 266

participants will present statements on the organization and development of the health services of their respective countries; a general discussion dealing especially with the staffing of health services and the meaning of community development in relation to health will follow. After this general session, the group will visit Egypt and Sudan, at the invitation of the Governments of these countries, to see some of the health establishments in each country.

With the help of the Regional Office, the Government of Egypt and the Government of Sudan have prepared a special seven-day programme for the group, including visits to national and local health institutions. In Egypt the group will visit the departments of endemic diseases control and social health, the health organization in the Fayoum, and the Qalyub demonstration and training centre; in Sudan they will visit medical and public health schools and welfare centres in Khartoum and Omdurman, and the public health services of the Blue Nile Province.

At the conclusion of the visit to each country, a discussion session is planned at which the group and national health authorities in the host government will have an opportunity to exchange views.

Professor A. Stampar, President of the Yugoslav Academy of Sciences and Arts, and Sir Andrew Davidson, former Chief Medical Officer of Scotland, have been invited to serve as special consultants to the group in leading the discussions.

Three travelling study groups of a similar nature were organized by the Regional Office for Europe between 1951 and 1954, and the participants all considered this a most useful means of promoting understanding and progress in public health administration.

Plans for Malaria Eradication in Eastern Mediterranean and European Regions

Dr P. F. Russell has been sent by WHO to help formulate a strategy to eradicate malaria from the countries between the Aegean Sea and the Persian Gulf. He is visiting Iran, Iraq, Jordan, Syria, Lebanon, and Turkey. He is accompanied by the Regional Malaria Adviser for the Eastern Mediterranean Region.

Another outstanding malariologist, Sir Gordon Covell, has gone to Ethiopia, where he will study the prevalence and distribution of malaria and assist the Government in drawing up control plans.

Leprosy Control in Iraq

Early in September 1955, WHO appointed Dr M. Dalgamouni, Egyptian specialist in leprosy, as consultant to the Government of Iraq to survey the leprosy problem in that country and make appropriate recommendations for its control.

Regional Committee for the Eastern Mediterranean, Sub-committee A

The session which Sub-Committee A of the Regional Committee for the Eastern Mediterranean held from 27 to 30 September 1955 in Beirut was attended by representatives of ten Member States of the Region,[6] one Associate Member,[7] and three European countries responsible for the administration of a number of territories attached to the Region.[8] Dr Jamil Anouti (Lebanon) was Chairman.

Reviewing the work done by the WHO Regional Office from 1 August 1954 to 31 July 1955, the Sub-Committee noted that at the present time 62 projects are in progress and that 32 others will be put into operation before the end of 1955. Of these projects, 47% concern the control of communicable diseases such as malaria, tuberculosis, venereal diseases, and the endemo-epidemic diseases, bilharziasis, in particular ; 17%, public health administration ; 14%, nursing; 8%, maternal and child health ; and 6%, environmental sanitation. In addition, during the period under review 117 fellowships were

[6] Egypt, Ethiopia, Iran, Iraq, Jordan, Lebanon, Libya, Pakistan, Saudi Arabia, and Syria

[7] Sudan, which is now an Associate Member of WHO, by virtue of a resolution adopted by the Eighth World Health Assembly

[8] France, Italy, and the United Kingdom of Great Britain and Northern Ireland

awarded to candidates desiring to undertake medical, paramedical, and nursing studies.

As a result of investigations made by WHO into the etiology of bilharziasis in the Region, new molluscacides have been tried ; among these, sodium pentachlorophenate has been found to be an improvement on copper sulfate. An inter-regional refresher course on bilharziasis and its prevention will probably be organized in 1957 in Cairo.

Seven tuberculosis-control training and demonstration centres are functioning in Egypt, Iran, Iraq, Israel, Lebanon, Pakistan, and Syria ; and 14 BCG vaccination campaigns have been undertaken, with the technical guidance of WHO and financial assistance from UNICEF. The tuberculosis-control dispensaries in the Region are being used increasingly as post-cure centres, which is a very encouraging sign.

A project under way at present in Egypt aims at preventing seasonal ophthalmia in 5000 pre-school-age children and at treating 2800 schoolchildren suffering from this malady. This project will make it possible to establish a plan for a systematic campaign against trachoma in the country, and similar projects are envisaged for Iran, Jordan, and Lebanon.

Environmental sanitation constitutes an integral part of programmes concerning health demonstration areas and the control of malaria, bilharziasis, and communicable eye diseases. Several countries have organized basic training courses for sanitary engineers and technicians, and courses are already available for the training of sanitary inspectors, particularly food supply inspectors.

The governments of the Region attach great importance to nursing services. Four countries appointed nurses as members of their delegations to the Sub-Committee, and the technical discussions in the plenary meetings on problems of nursing and nurse's training were followed by a number of nurses from Jordan, Lebanon, and Syria.

The Sub-Committee recommended the adoption of a budget for the Region of more than US$3 525 000 for 1957—i.e., $1 012 000 against WHO's regular budget, about $1 083 000 to be provided by United Nations Technical Assistance funds, and the balance coming from other extra-budgetary funds, including those from UNICEF. A large part of this budget will be devoted to the control of communicable diseases, to malaria, in particular. The Sub-Committee passed a resolution inviting Member States of the Region to participate in the campaign for the eradication of malaria. Such a campaign is justified by the fact that out of 170 million inhabitants, 50 million live in malarious zones and only 1 500 000 enjoy effective protection.

The governments of the Region and the Regional Office will continue to pay particular attention to professional education and training of medical and health personnel of all categories, including health auxiliaries.

After hearing a statement by the delegate of Iran with regard to measures adopted by his Government for combatting drug addiction, the Sub-Committee unanimously adopted a resolution put forward by the delegate of Egypt recommending the inclusion of the question of drug addiction in the WHO regional programmes.

Sub-Committee A will hold its next session in 1956 in Teheran.

Regional Committee for the Western Pacific

The Regional Committee for the Western Pacific held its sixth session from 13 to 19 September 1955 in Singapore, with fourteen Member States of the Region participating. Dr M. G. Candau, Director-General of WHO, attended the meeting, to which thirteen international organizations sent observers. The Chairman of the session was Dr R. H. Bland, Permanent Secretary to the Ministry of Health and Director of Medical Services, Singapore.

The Committee reviewed the report on the work accomplished in the Region from 1 July 1954 to 30 June 1955. WHO collaborated in national health programmes in the following domains : maternal and child health, environmental sanitation, health education of the public, malaria control, BCG vaccination campaigns, control of venereal diseases and treponematoses, nursing, mental health, and education and training

of health personnel. Health administrations of the Region, with encouragement from WHO, have also begun to give increasing attention to diseases such as filariasis, arthropod-borne virus diseases, and poliomyelitis. Mental health and dental health have also received increasing interest and have been made the subject of programmes which have been planned. Eighty-seven fellowships were awarded during the period under review.

Pursuant to recommendations put forward by the Second Asian Malaria Conference [9] and to the resolution of the Eighth World Health Assembly inviting governments to undertake malaria eradication campaigns as soon as possible,[10] the Committee adopted a programme destined to accelerate campaigns to eradicate malaria. This programme involves (1) exchange of information and provision of the relevant technical data to Member States ; (2) organization of malaria conferences, study groups, and meetings of chiefs of malaria services ; (3) supply of malaria advisory teams, on request ; (4) advisory services of highly experienced malariologists of international reputation ; and (5) provision of training facilities through fellowships, study tours, and malaria courses.

The Committee also adopted resolutions concerning environmental sanitation, the general programme of work for the period 1957-60, relations with UNICEF, public information activities, legislative developments in the expanded programme of technical assistance, campaigns against smallpox, guiding principles concerning projects to be financed under the regular budget, and long-term planning of health programmes.

By unanimous vote, the Committee decided to propose to the Executive Board that Dr I. C. Fang continue as Regional Director for the Western Pacific for an additional period of five years, beginning 1 July 1956.

The subject of the technical discussions this year was domiciliary midwifery as an approach to the people in the development of rural health services. Next year's discussions will deal with the approach to, and management of, the pre-school-age child.

The Committee will hold its seventh session in September 1956 in Manila. It accepted the invitation of the United Kingdom and Hong Kong governments to hold its eighth session in Hong Kong in 1957.

[9] See *Chron. Wld Hlth Org.*, 1955, 9, 253.
[10] See *Chron. Wld Hlth Org.*, 1955, 9, 197.

CORRIGENDA

Vol. 9, No. 8

THE EDUCATION OF SANITARY ENGINEERS

Page 231, left-hand column (Undergraduate Education, USA), line 9-10
delete the Massachusetts Institute of Technology and at

(Note : The Massachusetts Institute of Technology abandoned awarding undergraduate degrees in sanitary engineering in 1944 ; sanitary engineering courses are still included, as electives, in the civil engineering programme.—Ed.)

Vol. 9, No. 10

SCHOOL HEALTH SERVICES IN EUROPE

Page 272, left-hand column, next to last paragraph
delete last sentence, beginning " For example, . . . "

Page 275, left-hand column, line 25
delete elementary education
insert the education period

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WHO Publications Needed...

There is a demand for certain WHO publications which are now out of print. It would be greatly appreciated if those in possession of copies of these publications which they do not need would return such copies to the Organization. The following are sought:

Chronicle of the World Health Organization, Vol. 9, No. 4 (April 1955) and these numbers in the *World Health Organization: Technical Report Series*—

No. 10 Report on the first session of the Expert Committee on Environmental Sanitation

No. 16 Report on the first session of the Joint FAO/WHO Expert Committee on Nutrition

No. 22 Report on the first session of the Expert Committee on Professional and Technical Education of Medical and Auxiliary Personnel

No. 25 Report on the second session of the Expert Committee on Health Statistics

No. 44 Report on the second session of the Joint FAO/WHO Expert Committee on Nutrition

No. 53 Third report of the Expert Committee on Health Statistics

No. 59 First report of the Expert Committee on Trachoma

The publications should be addressed to: World Health Organization, Division of Editorial and Reference Services, Palais des Nations, Geneva, Switzerland.